Opening Up New Strategic Options in the Forest Industry: Case Biorefineries

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OUTLINE

• Background
• Objectives
• Challenges in the forest industry
• Theoretical perspective
• Creating economies of scope related strategic options
• Case forest biorefinery
• Conclusions
BACKGROUND

• Changing forest industry
  – Structural challenges within the external operational environment
  – Global climate change discussion
  ➔ Traditional sources of competitive advantage based on economies of scale are decreasing
  ➔ Forest industry companies forced to search for new value creating business opportunities
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OBJECTIVES

1. Provides a strategic options –based framework for managing dynamic capabilities within PPI
   — Porterian five forces model, the resource-based view, dynamic capabilities, strategic options
   - Helps to sense weak signals and open up new strategic options vital for PPI firms
OBJECTIVES

2. Provides examples of strategic options related to the PPI, deriving from
   • Forests
   • Technological process knowledge related to pulp mills and forest-based raw materials
   • Innovations related to traditional fiber-based products and end uses of the PPI

3. Case forest biorefinery
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CHALLENGES IN THE FOREST INDUSTRY

- Era of globalization and emergence of new markets
  - Increasing prices of important input factors
  - Increasing shareholder expectations
  - Changing customer preferences
  - Novel substitutes
  - Lack of capital to confront the challenges
  - The Kyoto Agreement
TURNING CHALLENGES INTO OPPORTUNITIES

- Renewable forest raw materials and responsible forestry

  ➡ A new platform for innovative business models
  (e.g. investments in R&D of eucalyptus fiber in Brazil)
The shift in dynamics in the PPI during 1996-2005
SHIFT IN DYNAMICS IN THE PPI

• Coming from 1996 to 2005
  – South American companies as ’value creators’
    • Highly cost efficient pulp raw material as a source of competitive advantage
  – North American companies as ’value destroyers’
    • Excluding Kimberly Clark
  – Companies stuck in the middle (e.g. all the Scandinavian integrated and diversified PPI companies)
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THEORETICAL PERSPECTIVE

- Opportunity for value creation or strategic options stems from interaction between a firm’s
  - Existing investments
    - Resources as a bundle of options for future strategic choice
  - New investments in its capabilities and knowledge
    - Renewing valuable resources over time with dynamic capabilities
  - Environmental opportunities
STRATEGIC OPTIONS – BASED FRAMEWORK

- Sensing weak signals and new value creation opportunities from the external environment and exploiting internally existing capabilities

- Building strategic options by controlling downside risks and seizing the upside opportunities (with e.g., strategic deferral, scaling or learning options)

- Reconfiguring the existing resource base by means of dynamic capabilities to address the changes

- Opportunity for value creation in order to create sustainable competitive advantage
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# MANUFACTURING ORIENTATIONS

<table>
<thead>
<tr>
<th></th>
<th>Traditional economies of scale</th>
<th>Future economies of scope</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main source of competitive advantage</strong></td>
<td>Large investments in tangible assets and effective control over physical capital and markets.</td>
<td>Ability to flexibly extend, modify and reconfigure internal and external (intangible) VRIN resources with dynamic capabilities.</td>
</tr>
<tr>
<td><strong>Role of forests</strong></td>
<td>Raw material to be used efficiently for large-scale pulp, paper and mechanical production.</td>
<td>Sustainable use of forests to both traditional and innovative end uses.</td>
</tr>
<tr>
<td><strong>Processes</strong></td>
<td>Large-scale, cost efficient processes making bulk products.</td>
<td>Sound knowledge of manufacturing processes is adjusted for innovative and customized products.</td>
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<tr>
<td></td>
<td>Incremental innovations that spread fast across the industry.</td>
<td>Appropriability is built around innovations.</td>
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<td><strong>Products</strong></td>
<td>Mass products (pulp, paper, mechanical) for industrial buyers.</td>
<td>Traditional fiber-based products and innovative products (e.g., energy, information delivery, intelligent packaging, intangible forests, medical, polymers) for customized industry and consumer markets.</td>
</tr>
<tr>
<td><strong>Required resources</strong></td>
<td>Forest industry specific assets with reliance on process efficiency.</td>
<td>Specialized resources according to the strategic focus.</td>
</tr>
<tr>
<td><strong>Representative type of an organization</strong></td>
<td>Large, vertically integrated conglomerates.</td>
<td>Focused and potentially networked organization using also outsourcing.</td>
</tr>
</tbody>
</table>
(1) FOREST RESOURCES AND CAPABILITIES

• Dynamizing the resource base:
  – Strategic cooperation with research institutes
  – Acquiring service business capabilities through partnerships and from markets
  – Developing technology related to processes and mechanical forest industry
  – Acquiring knowledge on sustainable forest management and ecosystems
  – Strategic networking with energy industry
(1) FOREST RESOURCES AND CAPABILITIES

• Potential strategic options
  – Cost efficient raw material for fiber-based products
  – High-quality special raw material for mechanical forest industry
  – Intangible value of forest ecosystems
  – Recreational use of forests
  – Bioenergy
  – Harvesting technologies
(2) PROCESS KNOWLEDGE OF PULP MILLS

• Dynamizing the resource base:
  – Strategic cooperation with research institutes
  – Strategic networking with chemical, biotechnology and pharmaceutical industries
  – Developing process technology
(2) PROCESS KNOWLEDGE OF PULP MILLS

• Potential strategic options
  – Biological processes
  – “Nanopulp”
  – “Druglike” products
  – Polymers
(3) INNOVATIVE END USES OF TRADITIONAL FIBER-BASED PRODUCTS

• Dynamizing the resource base:
  – Strategic cooperation with research institutes
  – Acquiring knowledge on the customer interface
  – Strategic collaboration with ICT industry
(3) INNOVATIVE END USES OF TRADITIONAL FIBER-BASED PRODUCTS

- Potential strategic options
  - E-paper
  - Brands for consumer products
  - Intelligent packages
  - Wireless data transmission (RFID)
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CASE FOREST BIOREFINERY

- Forest-based biomass has become a strategic resource
- PPI companies are in good positions in processing the biomass into bioenergy or biofuels
- When technologies become more sophisticated and enable biorefining, the opportunities for real breakthroughs proliferate
KEY STEPS IN VALUE CREATION

1. Sensing weak signals
   - The Kyoto Protocol
   - Corporate social responsibility (CSR) among consumers and society (environmental awareness)
   - Increasing global interest in forest-based raw material and biomass-for-energy business
KEY STEPS IN VALUE CREATION

2. Building the strategic options capturing upside potential
   - Forming strategic partnerships with e.g. research institutes and energy industry companies to complement the resource base and to gain new knowledge
   - Making feasibility studies relating to the raw material, technology and markets
   - Investing in pilot plants
   - Understanding the global economy
KEY STEPS IN VALUE CREATION

3. Hedging the downside risks of strategic options
   - Managing the options portfolio
   - Managing strategic partnerships with e.g. contracts
   - Exercising learning and waiting options if first-mover advantages are not strong
   - Appropriating knowledge assets from the use of rivals through building up a strategic fire wall by using legal means or by keeping the valuable knowledge tacit
   - Committing and rewarding professionals in the company
KEY STEPS IN VALUE CREATION

4. Exercising the strategic options
   – Investing in technology (forests, plants, distribution)
   – Investing in knowledge
KEY STEPS IN VALUE CREATION

5. Reconfiguring the existing knowledge base and capabilities to sustain competitive advantage obtained
   – Managing human resources proactively
   – Enhancing learning
   – Orchestrating the global value chain
   – Managing strategic partnerships
   – Buying services from experts
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CONCLUSIONS

• Many PPI companies struggle with value creation
  – Apart from firms that have stood out from old business models and built on unique, customer-oriented strategies
  
  Strategies need to be reconsidered to be able to exploit economies of scope and/or focusing on niches
  – Renewal of existing resource base and capabilities
  – Special challenge comes from understanding the role of intangible resources as well as using collaboration and markets for obtaining the needed resources and capabilities for strategic options
CONCLUSIONS

• Value creation in the PPI is possible with focused strategies
  – Raw material
  – Process knowledge created in pulp mills
  – Consumer markets

• Challenges and risks have to be turned into opportunities (e.g. the climate change and business opportunities related to biomass-for-energy business)
Thank you for your attention!